

# CIBSE Membership Fact Sheet



## Competence Criteria for FCIBSE – F21

These set out all of the skills and knowledge of building services engineering. They are based upon the Competence Statements issued by the Engineering Council (EC<sup>UK</sup>) as part of UK-SPEC.

The scope of building services engineering applications is recognised to be heating, lighting, refrigeration, acoustics, ventilation, air conditioning, water, plumbing, electrical power systems, vertical transport, control systems, fire and security, alarm systems, façade engineering, public health, integrated systems and intelligent buildings, including environmental and sustainability aspects. It may include roles in facilities management, project management, construction management, maintenance, research, development and education.

**You will be expected to be fully competent in at least 60% - 70% of these objectives detailed on the following pages and to have a knowledge and understanding of them all.**

**When writing your Engineering Practice Report, please ensure that you refer to all 16 competences.**

You may have broad based experience and responsibility or specialise in one or more aspects of building services.

If you would like to keep a personal record of how you are meeting each objective, you can obtain an Objective Achieved Report template from [www.cibse.org/Membership](http://www.cibse.org/Membership) or from Olwen Williams – Direct Dial 020 8772 3605 or email: [owilliams@cibse.org](mailto:owilliams@cibse.org)

### DESCRIPTOR

The work of an FCIBSE is characterised by their ability to develop appropriate solutions to engineering problems, using new or existing technologies, through innovation, creativity and change. They might develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient production techniques, marketing and construction concepts, pioneer new engineering services and management methods. Fellows are engaged in technical and commercial leadership and possess effective interpersonal skills. They demonstrate a personal and professional commitment to society, to their profession, and to the environment.

Fellowship is the most senior grade of CIBSE membership and as such should have reached a position in which they carry full responsibility for decisions on the design, management and financial implications of engineering projects. In addition to proven expertise in one or more specialist sectors, candidates for Fellow must show an understanding of the broad field of building services engineering.

**A Use a combination of general and specialist engineering knowledge and understanding to optimise the application of existing and emerging technology.**

No	Objective	Range	Evidence Examples
A1	Maintain and extend a sound theoretical approach in enabling the introduction and exploitation of new and advancing technology and other relevant developments. This could include an ability to:	Identify the limits of own personal knowledge and skills. Strive to extend own technological capability. Broaden and deepen one's own knowledge base through research and experimentation.	Identify through project involvement and a questioning mind, areas for development and research. Read technical journals via paper/electronic media. Engage in wide reading of general engineering, research and building design publications. Use / evaluate innovative solutions / new technology in specific projects with particular reference to sustainability and reducing carbon emissions.
A2	Engage in the creative and innovative development of engineering technology and continuous improvement systems. This could include an ability to:	Establish users' needs. Assess marketing needs and contribute to marketing strategies. Identify constraints and exploit opportunities for the development and transfer of technology within own chosen field. Promote new applications when appropriate. Secure the necessary intellectual property rights. Develop and evaluate continuous improvement systems.	Be responsible for multi-disciplinary project teams. Co-ordinate with other professionals including clients. Evaluate proposals and specific tasks to fully exploit the opportunities presented by contemporary schemes and solutions. Read publications of other relevant professional institutions. Make comparisons of your endeavours with those of your contemporaries. Implement innovative technologies paying due regard to sustainability and reducing carbon emissions. Undertake evaluation of completed projects to establish whether objectives were achieved and consolidate lessons learned. Be involved in, and influence the design, development, operation and running of all types of project at progressively increasing levels of responsibility. Take steps to protect the commercial value of your own and others' innovative work and ideas.

**B Apply appropriate theoretical and practical methods to the analysis and solution of engineering problems.**

No	Objective	Range	Evidence Examples
B1	Identify potential projects and opportunities. This could include an ability to:	Explore the territory within own responsibility for new opportunities. Review the potential for enhancing engineering products, processes, systems and services. Use own knowledge of the employer's position to assess the viability of opportunities.	Develop the business of your company and participate in formulating and realising the company objectives and business plan. Participate in activities, discussions, peer group reviews to enhance knowledge and understanding. Be responsible for and participate in proposals and presentations. Contribute to technology transfers, investigative thinking and critical evolution. Have marketing and business development responsibility.
B2	Conduct appropriate research, and undertake design and development of engineering solutions. This could include an ability to:	Identify and agree appropriate research methodologies. Assemble the necessary resources. Carry out the necessary tests. Collect, analyse and evaluate the relevant data. Draft, present and agree design recommendations, taking account of cost, quality, safety, reliability, appearance, fitness for purpose and environmental impact. Undertake engineering design.	Take part (e.g. as director, team leader or expert individual ) in early client contact/meetings/presentations, initial proposals and analysis. Select, use, and evaluate, off-the-shelf and customised soft ware packages. Integrate manual and computerised design techniques to achieve practical and innovative solutions. Establish and agree basis of design together with any appropriate cost plan, deliverables and programme for implementation. Engage with third parties to obtain any specialist input including product design, testing, models, mock-ups and research. Prepare reports, including option studies, whole life performance costs, drawing designs and other documentation that solve specific problems and/or meet agreed objectives.

No	Objective	Range	Evidence Examples
B3	Implement design solutions, and evaluate their effectiveness. This could include an ability to:	Ensure that the application of the design results in the appropriate practical outcome. Implement design solutions, taking account of critical constraints. Determine the criteria for evaluating the design solutions. Evaluate the outcome against the original specification. Actively learn from feedback on results to improve future design solutions and build best practice.	Work with manufacturers and installers and evaluate their contribution to the process. Authorise and lead improvements and remedial work to optimise the benefits of a post-occupancy review Read manufacturers' literature and test data to establish a full understanding of product development, manufacture and application and identify any limitations that might apply. Undertake peer review to obtain a third party critique of your interpretation. Establish benchmarks with similar projects as an evaluation strategy.  Update budgets, make comparisons and evaluate differences. Undertake Value Engineering exercises. Upon completion evaluate results against original targets and assumptions.

### **C Provide technical and commercial leadership.**

No	Objective	Range	Evidence Examples
C1	Plan for effective project implementation. This could include an ability to:	Identify the factors affecting the project implementation. Lead on preparing and agreeing implementation plans and method statements. Ensure that the necessary resources are secured and brief the project team. Negotiate the necessary contractual arrangements with other stakeholders (client, subcontractors, suppliers, etc.).	Play a key role in major projects involving other professionals and disciplines. Engage in site/management meetings, conduct of negotiations, meeting deadlines. Conduct risk analysis in compliance with CDM Regulations and other statutory regulations and the principles of best practice. Develop implementation programmes, identifying significant dates. Estimate and manage necessary resources. Lead the production of tender/bid documentation Answer client queries, respond to changes/requests, advise on cost/benefits ratios, and propose alternative solutions. Embrace current and proposed legislation including working towards zero carbon emissions and the use of sustainable materials.

No	Objective	Range	Evidence Examples
C2	<p>Plan, budget, organise, direct and control tasks, people and resources. This could include an ability to:</p>	<p>Set up appropriate management systems.            Agree quality standards, programme and budget within legal and statutory requirements.            Organise and lead work teams, coordinating project activities.            Ensure that variations from quality standards, programme and budgets are identified, and that corrective action is taken.            Gather and evaluate feedback, and recommend improvements.</p>	<p>Undertake tender analysis.            Use/compile criteria/checklists to ensure fair judgement between different tenderers.            Observe and report inconsistencies/misleading presentation of information in tenders received.            Take decisions on sound evidence, between competing tenders.            Obtain and use standard forms.            Read and refer to relevant legislation and cases, e.g., periodicals, Times Law Report and participate in Contract Law training courses/seminars.            Lead the preparation of documentation associated with claims or disputes.            Prepare spreadsheets of costings, resource required and monitor these against agreed programmes.            Evaluate any proposed changes and make recommendations/issue instructions accordingly.            Analyse staff costs and project long term resource requirements.            Set remuneration principles and packages.            Prepare data for interim accounts or annual report.            Take responsibility for departmental budgets, financial plans and profitability.</p>

No	Objective	Range	Evidence Examples
C3	Lead teams and develop staff to meet changing technical and managerial needs. This could include an ability to:	Agree objectives and work plans with teams and individuals. Identify team and individual needs, and plan for their development. Lead and support team and individual development. Assess team and individual performance, and provide feedback.	Have responsible experience of leading and managing others. Prepare job/ person specifications, job adverts. Select team members, coach, train and develop team spirit, resolve disputes. Develop and implement appraisal criteria / processes. Exhibit leadership skills, e.g. in managing a crisis.  Have responsibility in Quality Circles or similar. Read books and articles on origins of quality theory, TQM and current case studies. Analyse the distinctive features of QA in the building services engineering environment. Undertake a cost/benefit analysis of the QA scheme operated by your organisation. Lead damage limitation/ reparation when QA is or becomes compromised. Participate in Investors in People scheme or similar
C4	Bring about continuous improvement through quality management. This could include an ability to:	Promote quality throughout the organisation and its customer and supplier networks. Develop and maintain operations to meet quality standards. Direct project evaluation and propose recommendations for improvement.	Establish and participate in company quality schemes. Consult with and make presentations to colleagues and peer group of projects undertaken, project development, solutions reached and on specific issues. Organise or foster the development of quality groups. Evaluate your own work and be critical as to its content and outcome. Establish and implement KPI  Encourage and assist manufacturers, contractors and other professional colleagues/partners to evaluate their progress/inputs/outputs and strategic stages.  Engage in a process of continuous evaluation against preset targets. for e.g. resource, cash flow, drawing/documentation production, installation progress.

## D. Demonstrate effective interpersonal skills.

No	Objective	Range	Evidence Examples
D1	<p>Communicate with others at all levels.</p> <p>This could include an ability to:</p>	<p>Contribute to, chair and record meetings and discussions.</p> <p>Prepare letters, documents and reports on complex matters.</p> <p>Exchange information and provide advice to technical and non-technical colleagues.</p>	<p>Identify opportunities/constraints inherent in different site settings. Manage meetings, identify/ develop/ establish formal/informal communication channels between stakeholders.</p> <p>Negotiate on variations, instructions and final accounts.</p> <p>Prepare / handle handover/closing documentation.</p> <p>Plan and record outcomes of meetings</p> <p>Explain process, technical rationales and constraints as necessary to clients and colleagues. e.g. Factory Acceptance Tests, witness testing on site, role of regulatory authorities</p>
D2	<p>Present and discuss proposals.</p> <p>This could include an ability to:</p>	<p>Prepare and deliver presentations on strategic matters.</p> <p>Lead and sustain debates with audiences.</p> <p>Feed the results back to improve the proposals.</p>	<p>Take part in meetings with prospective and current clients.</p> <p>Analyse client specification.</p> <p>Obtain involvement of different departments in preparing final package.</p> <p>Prepare bids and submissions.</p> <p>Evaluate final tender, appreciate particular tendering practices, working practices and cultural differences of particular types of client, e.g. local authority clients, private/public sector clients, overseas clients, PFI, Partnering.</p> <p>Deliver powerful and effective presentations using appropriate software and other presentation aids to small and large groups having researched and prepared material. Answer questions and engage in debate.</p> <p>Attend seminars, critically assess their usefulness, ask questions and debate answers.</p>

No	Objective	Range	Evidence Examples
D3	<p>Demonstrate personal and social skills. This could include an ability to:</p>	<p>Know and manage own emotions, strengths and weaknesses. Be aware of the needs and concerns of others. Be confident and flexible in dealing with new and changing interpersonal situations. Identify, agree and lead work towards collective goals. Create, maintain and enhance productive working relationships and resolve conflicts.</p>	<p>Select and use appropriate communications styles for the full range of professional situations, e.g. skim/ scan/ study read, write for notes, memos, formal letter, academic, report writing, minutes. Exhibit well developed listening skills. Make oral presentation to small / large formal / informal groups. Exhibit interpersonal skills e.g. assertiveness, negotiation, flexibility, dealing with conflict. Select appropriate communication modes / approaches for different situations e.g. sell, explain, reprimand. Communicate in a foreign language. Establish links with training/education providers. Advise and encourage others on building services engineering careers. Demonstrate advanced time and stress management skills.</p>

**E Demonstrate a personal commitment to professional standards, recognising one's obligations to society, the profession and the environment.**

No	Objective	Range	Evidence Examples
E1	<p>Comply with relevant codes of conduct.</p> <p>This could include an ability to:</p>	<p>Comply with the rules of professional conduct of own professional body.</p> <p>Lead work within all relevant legislation and regulatory frameworks, including social and employment legislation.</p>	<p>Examine digest and abide by the CIBSE Code of Conduct.</p> <p>Exercise all reasonable professional skill and care</p> <p>Give due regard as appropriate to the Engineering Council (ECUK) Guidelines.</p> <p>Exercise professional competence via a working knowledge of all current and impending legislation and Codes of Practice that will influence guide and regulate the execution of one's duties.</p> <p>Maintain professional competence and currency of technical knowledge and understanding through research, reading and participating in the activities of the Institution.</p>
E2	<p>Manage and apply safe systems of work.</p> <p>This could include an ability to:</p>	<p>Identify and take responsibility for own obligations for health, safety and welfare issues.</p> <p>Ensure that systems satisfy health, safety and welfare requirements.</p> <p>Develop and implement appropriate hazard identification and risk management systems.</p> <p>Manage, evaluate and improve these systems.</p>	<p>Be aware of one's employers Health and Safety Policy as it relates both to one's personal circumstances and to responsibility to others.</p> <p>Provide information as required for the Health and Safety plan for projects and to comply with the Construction (Design &amp; Management) Regulations (CDM).</p> <p>Be familiar with and take responsibility for safe systems of work, method statements for the execution of work and permits to work systems.</p>

No	Objective	Range	Evidence Examples
E3	Undertake engineering activities in a way that contributes to sustainable development. This could include an ability to:	Operate and act responsibly, taking account of the need to progress environmental, social and economic outcomes simultaneously. Use imagination, creativity and innovation to provide products and services which maintain and enhance the quality of the environment and community, and meet financial objectives. Understand and secure stakeholder involvement sustainable development.	Actively promote the profile and implementation of engineering solutions and designs that embrace the principles of sustainability in materials and energy sources.  Actively engage in the process of reducing carbon emissions by reducing energy requirements utilising prudent design techniques and innovation.  Observe good practice in respect of sustainability, energy conservation and environmental awareness in the conduct of your own business/practice.  Help clients to embrace sound environmental principles through providing whole life performance information.
E4	Carry out continuing professional development necessary to maintain and enhance competence in own area of practice. This could include an ability to:	Undertake reviews of own development needs. Prepare action plans to meet personal and organisational objectives. Carry out planned (and unplanned) CPD activities. Maintain evidence of competence development. Evaluate CPD outcomes against the action plans. Assist others with their own CPD.	Be involved with CIBSE activities. Read professional journals, attend management, CIBSE and other development seminars. Plan own immediate, medium and long term CPD. Establish links with training/education providers. Advise others on building services engineering careers. Mentor, assist and guide the professional development of others Access information sources for learning opportunities. Exercise skills transfer between professional and personal life.  Be involved in outside activities for professional development, professional bodies, school governors etc. Mentor and assist the professional development of others.